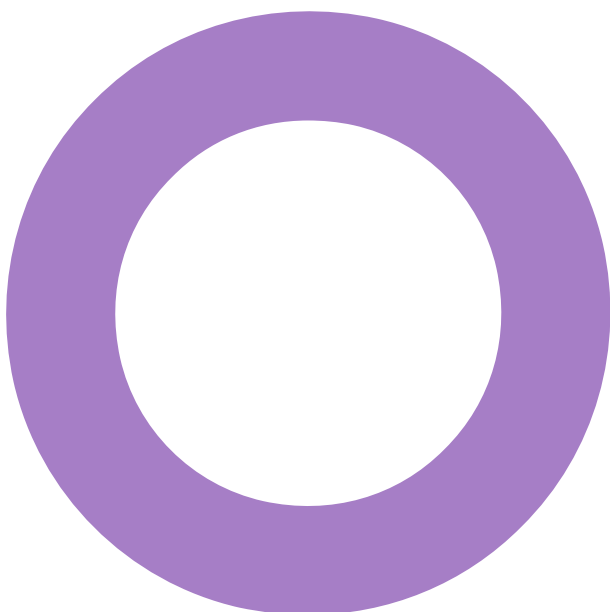


**Manor Road.  
Richmond.**  
**Avanton Richmond  
Development Ltd.**

**ENERGY STRATEGY**  
RESPONSE TO GLA COMMENTS

REVISION 02 – 16 MAY 2019



## Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
01	25/04/2019	First issue for team comments	L. Wille	-	-
02	16/05/2019	Updated with team comments	L. Wille	T. Cox	L. Wille

This document has been prepared for Avanton Richmond Development Ltd only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

Project number: 23/23145

Document reference: REP-2323145-5A-LFW-20190425-Response to GLA comments-Rev 02

## Contents.

Audit sheet.	2
Executive summary	5
<b>1. Overview of proposals</b>	<b>5</b>
Applicant response	5
<b>2. BE LEAN</b>	<b>5</b>
Applicant response	5
<b>3. CO<sub>2</sub> and Energy Performance</b>	<b>6</b>
3.1 Domestic	6
Applicant response	6
3.2 Non-domestic	6
Applicant response	6
<b>4. Energy Demand and Fabric Energy Efficiency</b>	<b>6</b>
Applicant response	6
<b>5. Cooling and Overheating</b>	<b>6</b>
Applicant response	7
5.1 Domestic	7
Applicant response	7
5.2 Non-domestic	8
Applicant response	8
<b>6. BE CLEAN</b>	<b>8</b>
6.1 District heating	8
Applicant response	9
<b>7. BE GREEN</b>	<b>9</b>
Applicant response	9
7.1 Heat pumps	9
Applicant response	10
7.2 PVs	10
Applicant response	11
<b>8. DOMESTIC CARBON SAVINGS</b>	<b>11</b>
Applicant response	12
<b>9. NON-DOMESTIC CARBON SAVINGS</b>	<b>12</b>
Applicant response	12

---

Appendix A – Correspondence with LBRuT regarding local district heating networks	<b>13</b>
Appendix B – PV array sizing	<b>14</b>
Appendix C – ASHP selection - technical datasheet (Mitsubishi)	<b>15</b>
Appendix D – Correspondence between applicant team and planning officer regarding carbon offset payment approach	<b>16</b>

## Executive summary

This document provides a response to the comments provided by the Greater London Authorities (GLA) on 03/04/2019 to the Energy Strategy prepared by Hoare Lea in support of the planning application for Manor Road, Richmond (case number 4795).

For ease, comment made by the GLA are included within this document in full in pink coloured text, with the team's response immediately following each comment in black text.

## 1. Overview of proposals

1. The Energy Hierarchy has been followed; the proposed strategy is generally supported; however, the applicant should submit additional information to ensure compliance with the London Plan policies.
2. The applicant has used 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 has been submitted for review, which is welcomed.
3. For the purposes of this assessment, the applicant will be estimating the CO<sub>2</sub> emission performance against London Plan policies using the SAP 10 emissions factors.

### Applicant response

- Point 1: Additional information is provided within this document.
- Points 2&3: No response required.

## 2. BE LEAN

4. A range of passive design features and demand reduction measures are proposed to reduce the carbon emissions of the proposed development.
5. The applicant is encouraged to investigate the potential for improving the thermal bridging default assumptions.

### Applicant response

- Point 4: No response required
- Point 5: The approach at the planning stage has been to use pragmatic inputs for the thermal bridging assumptions within the SAP calculations. Improved thermal bridging would likely make a notable difference to the results, however at this stage of the design, the build-up of each junction has not yet been developed in sufficient detail to assess the thermal bridging values with certainty. Thus, it is expected the inputs used will be achievable as a minimum, and improvements likely to be realised in the detailed design. The only improvement above 'default' inputs assumed at this stage has been for window lintels, as it is expected it will be possible to use a proprietary product detail to achieve an improved value for this junction (i.e. likely no requirement for specialist detailed calculations). The team will investigate further possible improvements to the thermal bridging in the next design stage, with the aim to achieve further carbon reductions towards the 10% target from Be Lean measures.

## 3. CO<sub>2</sub> and Energy Performance

### 3.1 Domestic

6. The domestic element development is estimated to achieve a reduction of 26 tonnes per annum (7%) in regulated CO<sub>2</sub> emissions compared to a 2013 Building Regulations compliant development. The applicant should note that the new draft London Plan includes a target of a 10% improvement on 2013 Building Regulations from energy efficiency which applicants should be aiming towards. The applicant should therefore model additional energy efficiency measures and commit to higher carbon savings through energy efficiency alone.
7. The applicant has provided a single example of the 'be lean' DER and TER output sheets from the modelling software; they should provide these for all units modelled that contribute to the reported CO<sub>2</sub> emissions.

#### Applicant response

- Point 6: As the new London Plan is draft only, the policies are yet to be adopted, and as such have not been incorporated into the proposals laid out within the energy strategy. That being said, the residential areas of the development are expected to achieve 7% carbon emission reductions from passive design and energy efficiency alone, and therefore it is the team's opinion that the design has indeed *aimed towards* the higher standard expected to be required with the implementation of the upcoming London Plan (10%). Further, as confirmed in point 5 above, the team will investigate further possible improvements to the thermal bridging in the next design stage, with the aim to achieve further carbon reductions towards the 10% target from Be Lean measures.
- Point 7: All Be Lean DER and TER output sheets from the SAP modelling are provided as a separate .zip file alongside this response.

### 3.2 Non-domestic

8. The non-domestic element of the proposed development is estimated to achieve a reduction of 2 tonnes per annum (20%) in regulated CO<sub>2</sub> emissions compared to a 2013 Building Regulations compliant development.
9. The applicant has provided the 'be lean' BRUKL sheets from the modelling software.
10. Tenant fit-outs will be required to meet the Non-Domestic Building Services Compliance Guide (2013) as a minimum and also meet the minimum energy standard for BREEAM Excellent; this is welcomed.

#### Applicant response

- Points 8, 9&10: No response required.

## 4. Energy Demand and Fabric Energy Efficiency

11. The applicant has provided the predicted energy demand for the development, this is welcomed.
12. The applicant has reported the Part L Fabric Energy Efficiency (FEE) performance for the baseline and the 'be lean' scenarios and it is estimated that the development will achieve a reduction of 4% in annual heating and cooling demand.

#### Applicant response

- Points 11&12: No response required.

## 5. Cooling and Overheating

13. The demand for cooling and the overheating risk will be minimised through low glazing g-value of 0.4 and external awning above the commercial unit glazing.

14. The applicant is assessing whether to incorporate thermal mass to living room ceilings in the form of phase change plasterboard which, coupled with windows opened at night, will help to reduce high temperatures in the daytime, as the phase change material acts as a 'coolth-sink'. This has been included for in the modelling and is encouraged.

### **Applicant response**

- Points 13&14: No response required.

### **5.1 Domestic**

15. The applicant has completed the domestic overheating checklist to identify potential site-specific risks which may lead to overheating, this is welcomed.
16. A Dynamic Overheating Analysis has been undertaken to assess the overheating risk within the dwellings using the CIBSE TM59 methodology and the London Design Summer Year 1 (DSY1) weather file: 2020s, High emission, 50% percentile scenario. The applicant should also investigate the risk of overheating using the DSY 2 & 3 weather files.
17. The results show that the design proposals are anticipated to meet the CIBSE recommendations for comfort for all units, assuming natural ventilation i.e. occupants can open the windows, blinds, mechanical ventilation and phase change material ceilings. Reliance on internal blinds and mechanical ventilation is not encouraged. Therefore:
  - The applicant should consider further passive design measures in line with Policy 5.9, to reduce the reliance on blinds and mechanical ventilation and ensure all units pass the requirements with these features at a minimum.
  - The applicant should confirm that any required blinds will be included in the base build and demonstrate that the blinds do not interfere with the effective opening area of windows.
18. The applicant has also assessed a sample of corridors and has proposed a strategy to ensure the comfort criteria can be met.
19. The applicant proposes to implement cooling to a proportion of apartments, with preference given to those apartments at risk of experiencing excessive noise from external sources. It is not expected that 'active cooling' will be proposed for any residential developments, and on that basis it is not supported.

### **Applicant response**

- Point 15: No response required.
- Point 16: The assessment was carried out in line with the TM59 methodology, section 2.2-11 of which states that the assessment should be carried out using the DSY1 2020, high emissions, 50% scenario weather file. In line with the same methodology, as the development is not situated in the central London heat island, and as it is not expected that there will be a concentration of vulnerable occupants, it is considered that the weather file used is already a good assessment of overheating risk without the need to test further weather files. The design was adjusted in response to the TM59 testing, with changes made to window sizes and opening types to ensure these can be securely opened at night, and suggested phase change material included in some ceilings to add thermal mass.
- Point 17: In response to the two separate points made, the applicant notes:
  - Further passive measures: Blinds have not been included within the compliant runs of the TM59 assessment, as confirmed in table 19 of the energy strategy report. Further, the compliant results given in the planning supplication were based on a natural ventilation only scenario. Apartments will be fitted with mechanical ventilation with heat recovery for background ventilation, but it is not expected this mechanical ventilation will form part of the overheating risk mitigation strategy. All tested units are currently expected to pass TM59 without the need for blinds or mechanical ventilation.
  - It is not expected that blinds will be required as part of the overheating risk mitigation strategy.
- Point 18: No response required.

- Point 19: As the TM59 have confirmed within the energy strategy report, it is expected that apartments will be able to meet the overheating risk mitigation criteria in the naturally ventilated scenario. However, the acoustic consultant has advised the site is exposed to moderate noise levels, and therefore residents in some apartments may wish to keep windows closed to obtain internal acoustic comfort. The test of the 'sealed façade' scenario shows that not all rooms are expected to be able to meet TM59 criteria with mechanical ventilation alone. This is as can be expected for developments tested using the London DSY1 2020 50% weather file, for the following reasons:
  - The criterion is that occupied spaces should not exceed an operative temperature of 26°C for more than 3% of annual occupied hours (Jan-Dec)
  - External ambient temperatures in the London DSY1 exceed 26°C by 2.7% of annual hours. This effectively precludes the use of mechanical ventilation as a design solution to mitigate overheating risk, since whatever the amount of mechanical supply air, and / or passive design measures, internal temperatures will exceed the 3% threshold due to unavoidable heat gains

It is therefore considered prudent, in apartments which are expected to experience higher internal temperatures, and which are located in areas that may experience noise above the recommended WHO thresholds, that cooling is a reasonable option to further mitigate risk of overheating to occupants. Occupants will also have the option to use openable windows as a strategy to mitigate overheating should they so choose, and it has been shown that all tested units are expected to pass the TM59 'adaptive' criteria in this way.

## 5.2 Non-domestic

20. The area weighted average (MJ/m<sup>2</sup>) and total (MJ/year) cooling demand for the actual and notional building has been provided and the applicant has demonstrated that the actual building's cooling demand is lower than the notional.

### Applicant response

- Point 20: No response required.

## 6. BE CLEAN

### 6.1 District heating

21. The applicant has carried out an investigation and there are no existing or planned district heating networks within the vicinity of the proposed development. They should contact the borough and ask whether they know of any schemes coming through; evidence of this correspondence should be provided.
22. The applicant has provided a commitment to ensure that the development is designed to allow future connection to a district heating network. They suggest that space allowance has been made for heat interface units to the ground floor of each building, and a potential distribution route has been identified, should a district energy system become available in future which the Proposed Development could connect to. Drawings demonstrating how the site is to be future-proofed for a connection to a district heating network have been provided.
23. The applicant is not proposing a site wide heat network and is instead proposing a communal heating system at a building level. The dwellings within each building will connect to the rooftop ASHPs via Heat Interface Units (HIU). Capped-off connections will be provided to the commercial units which will be available to tenants, although the modelling assumes point-of-use water heaters will be provided for their DHW. The applicant argues that the additional distribution losses from a site-wide network will result in a 12% increase in development CO<sub>2</sub> emissions. They also suggest they can't accommodate all external condenser units on the roof of a single block. However, future-proofing for district heating is a strategic policy for reasons and the development is within an area with potential for district heating in future; therefore, the applicant is required to provide a site-wide heat network served by a single energy centre to future proof the development for easy connection to a wider heat network should one become available. Moreover, the applicant should investigate how the number of energy centres can be minimised.



### Applicant response

- Point 21: We have contacted the Borough of Richmond Upon Thames to enquire about existing or planned district heating networks in the vicinity of the proposed development. We currently are awaiting a response from the council's consultant, therefore this information will follow as soon as it is available.
- Point 22: No response required.
- Point 23: The energy strategy has been produced with the clear objective to minimise carbon emissions from the development, and provide a robust provision of services at a reasonable cost to occupants. As stated in the energy strategy report, incorporating district energy pipework would not only add to the capital cost of the development but would also be expected to add increased operational cost due to increased distribution losses in district pipework, resulting in increased carbon emissions, and increased energy bills to all occupants. In accordance with the London Heat Map, there are currently no proposed future district energy networks in the vicinity of the site, and as the site is constrained by railways on two sides it is considered there would be a very small chance any future network would realistically come within the vicinity of a connection point. It is the applicant's opinion that, given the combination of increased carbon emissions, increased capital and operational cost, and the negligible chance of a future district energy connection happening for this site, that the provision of a sitewide connection between energy centres on day 1 would be harmful to this strategy. The strategy that has been put forward to enable potential future connection is deemed by the applicant to be a reasonable compromise (a space allowance for a future potential heat exchanger at the ground floor of each block, so that a connection can be made in future, should a low carbon network become available, albeit this would require some ground work to extend the district connection from the site boundary to each block).

## 7. BE GREEN

24. The applicant has investigated the feasibility of a range of renewable energy technologies and is proposing to install Photovoltaic (PV) panels and Air Source Heat Pumps.
25. A reduction in regulated CO<sub>2</sub> emissions of 107 tonnes per annum (29%) will be achieved through this third element of the energy hierarchy.

### Applicant response

- Point 24: No response required.
- Point 25: The applicant has undertaken a further review of the roof areas based on the latest design, and one further location suitable for a PV array has been identified. Please refer to Appendix B. This location is expected to be able to accommodate approx. 20 m<sup>2</sup> of PV panel area (13 panels), with an estimated resulting 2.4 tCO<sub>2</sub> additional carbon emission reductions. Please see further details under the response to point 29 below.

### 7.1 Heat pumps

26. Centralised heat pumps are being proposed in the form of Air Source Heat Pumps (ASHPs) with condensing units on the roof. DHW will be provided by electric immersion top-up.
27. The applicant provides a cost comparison of the operation cost of communal air source heat pumps and gas boilers; with RHI included for the ASHPs are significantly cheaper per kWh of heat, however, without RHI, gas boilers are marginally cheaper.
28. Further information on the heat pumps should be provided including:
  - a. 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.
  - b. 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).

- c. 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.
- d. 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.
- e. 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).

### Applicant response

- Points 26-27: No response required.
- Point 28:
  - a. The ASHP system is estimated to supply the following energy to the development:
    - Space Heating: 497 MWh/annum, equivalent to 100% of the total demand for residential areas of the site.
    - Domestic Hot Water: 655 MWh/annum, equivalent to 90% of the total demand for residential areas of the site.
    - Cooling: 42 MWh/annum, equivalent to 100% of the total demand for residential areas of the site.
  - b. The SCOP for the heat pumps proposed is 2.89. This is based upon data provided by the manufacturer, showing the heat output and power input at a range of conditions (please refer to appendix C). The manufacturer has confirmed the SCOP calculation is based upon the following breakdown of runtime at each condition:
    - 5% at -5°C
    - 40% at 3°C
    - 45% at 9°C
    - 10% at 15°C
  - c. The direct electric element has been included in the energy modelling in the form of a compound COP, which accounts for the proportion of top-up from the immersion heater, with a COP of 1. Please refer to page 11 of the energy strategy submitted in support of the planning application for further details.
  - d. The design heat source (air) temperature is -4°C, and the proposed LTHW distribution temperature is 55°C. This has been chosen to minimise the amount of DHW production which will be borne by the direct electric element. Reducing the LTHW distribution temperature would increase the proportion of direct electric heating required, which would significantly increase the running cost to all residential occupants, and the total carbon emissions of the system. Therefore, although a lower distribution temperature could provide benefits in terms of ASHP efficiency and distribution loss reductions, it has been considered that the proposed solution will result in the best overall outcome for the scheme. Estimated distribution losses for the scheme have been included within the energy strategy provided in support of the Planning Application.

### 7.2 PVs

29. PV is being proposed equating to circa 120 m<sup>2</sup> of net PV area; the applicant should confirm the proposed kWp. From the basic roof layout provided, there appears to be additional space for PV. A detailed roof layout should be provided demonstrating that the roof's potential for a PV installation has been maximised and clearly demonstrating any constraints. 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. It should also be noted that the PV savings reported of 3.3 tonnes of CO<sub>2</sub> /annum are considered very low.

### Applicant response

- Point 29: The PV array proposed in the planning application stage energy strategy was equivalent to an estimated 18kWp. This was based on an appraisal of available, accessible and unshaded roof area. The applicant has undertaken a further review of the roof areas based on the latest design information, and one further location suitable for a PV array has been identified. This location is expected to be able to accommodate 13 further panels, equivalent to approx. **20 m<sup>2</sup>** of PV panel area, and equivalent to an additional **4kWp (i.e. now a total of 22kWp)**. This is estimated to result in **0.6 tCO<sub>2</sub>** additional carbon emission reductions (i.e. now a total estimated carbon emission reduction of **3.9 tCO<sub>2</sub>/year** from PV). The roof mark-up which was provided within the energy strategy has been updated to confirm where roofs are expected to be overshadowed, and where roof areas are expected to be of insufficient size to accommodate an array of PVs. Please refer to Appendix B. PV panels have been spaced apart to ensure overshadowing will be minimised from surrounding elements such as parapets, and from adjacent rows of PVs, and to allow access for maintenance. The spacing has been based on good-practice guidance – please refer to Appendix B for further details.

It should be noted here also that carbon emission reductions from solar PV are reduced when using SAP 10 carbon factors. **Had the Part L 2013 carbon factor for electricity been used, the updated proposed array (22kWp) would have been expected to result in a carbon emission reduction of approx. 8.7 tCO<sub>2</sub> /annum.**

## 8. DOMESTIC CARBON SAVINGS

Based on the energy assessment submitted at stage I, the table below shows the residual CO<sub>2</sub> emissions after each stage of the energy hierarchy and the CO<sub>2</sub> emission reductions at each stage of the energy hierarchy for the domestic buildings.

Table: CO<sub>2</sub> emission reductions from application of the energy hierarchy

	Total residual regulated CO <sub>2</sub> emissions	Regulated CO <sub>2</sub> emissions reductions	
	(tonnes per annum)	(tonnes per annum)	(per cent)
Baseline i.e. 2013 Building Regulations	385		
Energy Efficiency	359	26	7%
CHP	359	0	0%
Renewable energy	254	105	27%
<b>Total</b>		<b>131</b>	<b>34%</b>

30. An on-site reduction of 131 tonnes of CO<sub>2</sub> 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 34%.
31. A minor discrepancy between the value reported in the Energy Statement and that reported in the GLA spreadsheet is noted; the value in the spreadsheet has been assumed to be correct here.
32. The carbon dioxide savings fall short of the on-site target within Policy 5.2 of the London Plan. The applicant should consider the scope for additional measures aimed at achieving further carbon reductions.
33. The domestic buildings are required to meet the zero carbon target as the application was received by the Mayor on or after the 1<sup>st</sup> October 2016. The applicant should therefore ensure that the remaining regulated CO<sub>2</sub> emissions, equivalent to [X]tonnes of CO<sub>2</sub> per annum, is met through a contribution to the borough's offset fund.
34. The applicant is required to confirm either the amount of funding that will be paid into the borough's carbon offset fund or that an agreement has been reached with the borough that the applicant will undertake a carbon reduction project off-site to meet the shortfall. In both cases evidence of correspondence with the borough confirming the approach should be provided.

### Applicant response

- Points 30-32: As set out within the energy strategy report, the expected annual carbon savings for residential areas is 35%, in line with the London Plan target for on-site carbon emission reductions, and the development is thus expected to meet the target set within policy 5.2. The discrepancy between the results given in the GLA spreadsheet provided and the energy strategy report (3tCO<sub>2</sub>/annum) is the contribution from the PV array. Including a PV array into SAP calculations is a detailed exercise which is best left for when a full, detailed SAP model is produced for all unit types – expected at RIBA Stage 4. At the planning stage, the carbon emission reduction from PVs (~3tCO<sub>2</sub>/annum, as confirmed in the Be Lean section of the report) were added to the reported SAP calculation results, which include passive design, energy efficiency, and ASHP.
- Point 33: As detailed in table 1 within the Energy Strategy report, it was estimated as part of the planning application reporting that a total carbon offset payment of £451,800 would be payable to offset the estimated 251 tCO<sub>2</sub> shortfall from the zero carbon target for residential areas. With the additional PV array identified (as per the response to point 29 above), it is now estimated that a shortfall of **250 tCO<sub>2</sub>** will remain for residential areas, and it is therefore currently estimated that a total carbon offset payment of **£450,000** will be payable to the council.
- Point 34: The carbon offset payment is expected to be fixed as part of the S106 negotiations. It has been confirmed in correspondence between the planning consultant and the planning officer from Richmond that this approach is supported. Please see appendix D for further details of this correspondence.

## 9. NON-DOMESTIC CARBON SAVINGS

Based on the energy assessment submitted at stage I, the table below shows the residual CO<sub>2</sub> emissions after each stage of the energy hierarchy and the CO<sub>2</sub> emission reductions at each stage of the energy hierarchy for the non-domestic buildings.

Table: CO<sub>2</sub> emission reductions from application of the energy hierarchy

	Total residual regulated CO <sub>2</sub> emissions (tonnes per annum)	Regulated CO <sub>2</sub> emissions reductions	
		(tonnes per annum)	(per cent)
Baseline i.e. 2013 Building Regulations	10		
Energy Efficiency	8	2	20%
CHP	8	0	0%
Renewable energy	6	2	20%
<b>Total</b>		4	40%

35. An on-site reduction of 4 tonnes of CO<sub>2</sub> per year in regulated emissions compared to a 2013 Building Regulations compliant development is expected for the non-domestic buildings, equivalent to an overall saving of 40%.
36. The carbon dioxide savings exceed the target set within Policy 5.2 of the London Plan.
37. All comments above should be addressed before compliance with London Plan energy policy can be verified.

### Applicant response

- Points 35-36: No response required.
- Point 37: Response to all comments have been provided within this note.





## Appendix A – Correspondence with LBRuT regarding local district heating networks

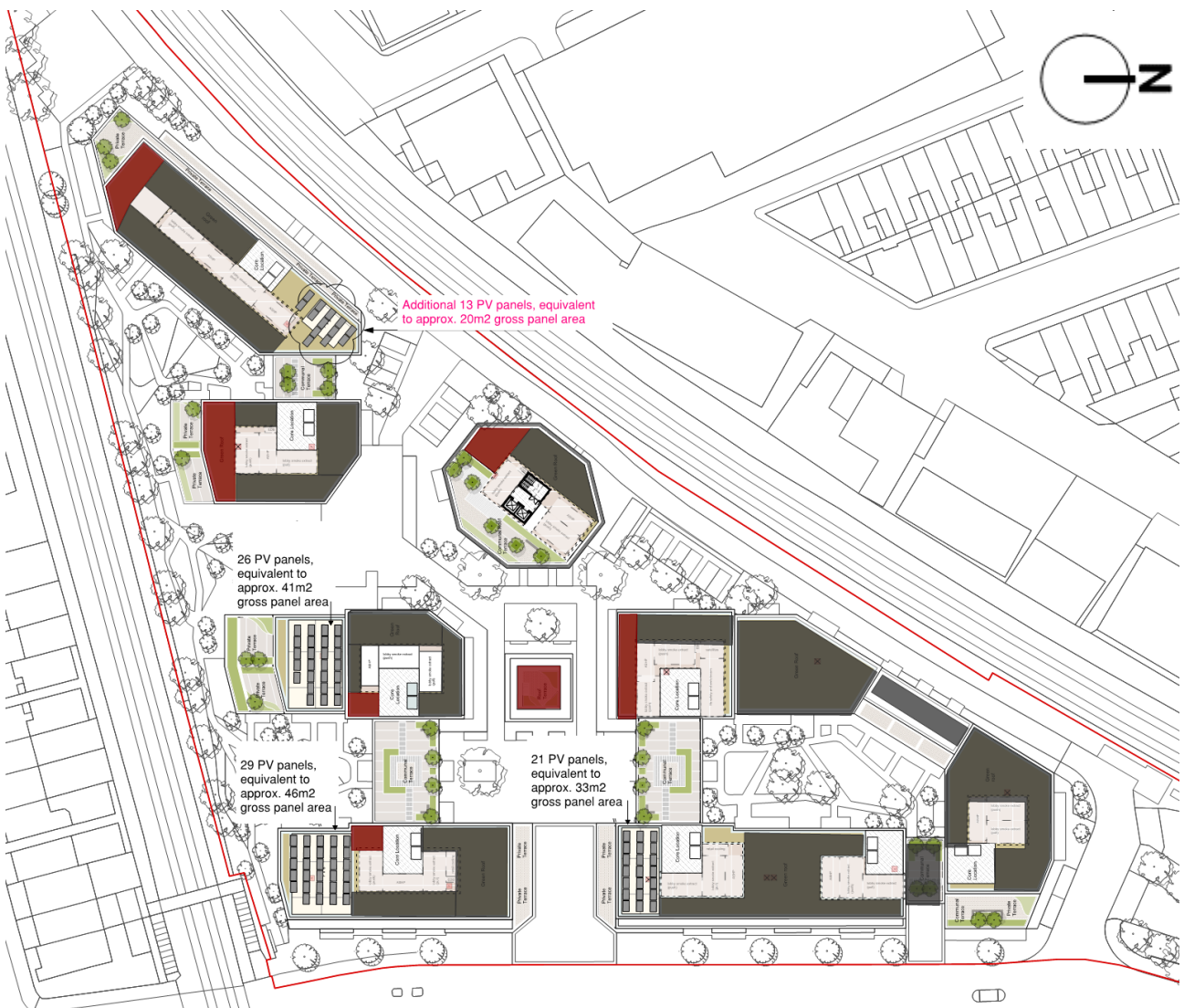
To follow – awaiting response from Richmond’s consultant.

## Appendix B – PV array sizing

The roof layout has been detailed further since the planning application, and plant allocations have changed slightly. This has allowed for a further PV array on the affordable block to the SW of the site. Please see an updated roof layout below. We have now marked this up further to annotate areas that are likely to be overshaded, and areas that are estimated to be too small for individual PV arrays. In total, an additional ~20m<sup>2</sup> of PV panel area (13 panels) has been allocated, resulting in an expected further 0.6 tonnes carbon emission reductions for the site.

Legend:

-  Roof amenity space
-  Plant space
-  Roof areas expected to be overshaded for significant periods
-  Roof area deemed too small to fit a PV array



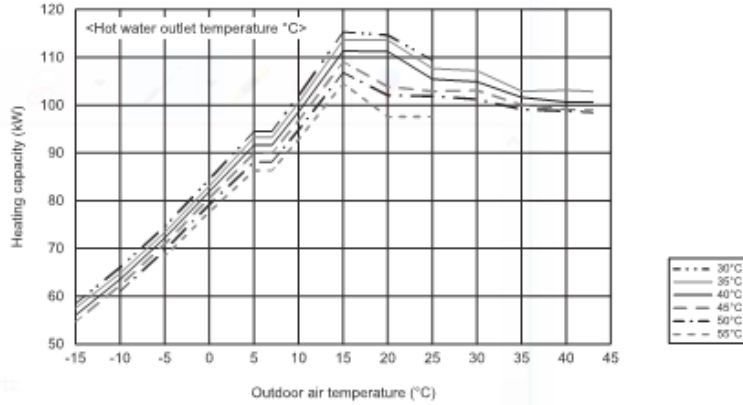
## Appendix C – ASHP selection - technical datasheet (Mitsubishi)

### 2. Product Data

[Cold/hot water outlet/inlet temperature difference 5°C]

EAHV-P300Y(A)(H)

■ Heating Capacity



the following parts:

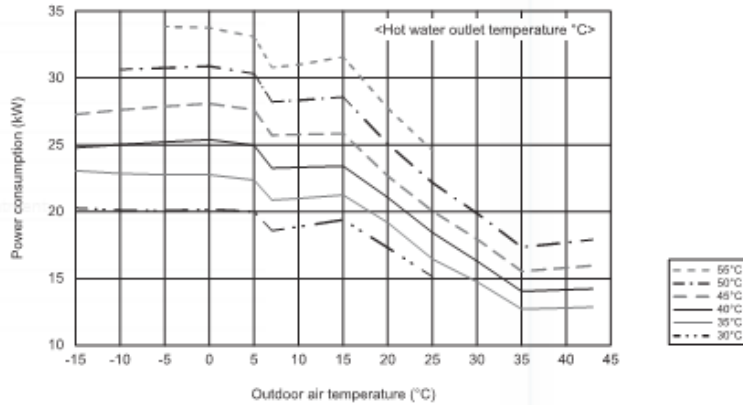
ers

air project

Installation

ns

ions of Approx



## Appendix D – Correspondence between applicant team and planning officer regarding carbon offset payment approach

**From:** [Garside, James](#)  
**To:** [Doull, Rebecca \(Avison Young - UK\)](#)  
**Cc:** [Crick, Rachel \(Avison Young - UK\)](#); [Clarke, Freddie \(Avison Young - UK\)](#)  
**Subject:** RE: Homebase Manor Road - carbon offset fund  
**Date:** 07 May 2019 10:02:40

---

External Sender

External Sender

Hi Rebecca,

Yes we're happy with a contribution.

We will have to check the figures once the energy report is finalised (presuming the GLA are seeking further info etc).

Thanks,  
James

---

**From:** Doull, Rebecca (Avison Young - UK) <Rebecca.Doull@avisonyoung.com>  
**Sent:** 03 May 2019 17:06  
**To:** Garside, James <James.Garside@richmondandwandsworth.gov.uk>  
**Cc:** Crick, Rachel (Avison Young - UK) <Rachel.Crick@avisonyoung.com>; Clarke, Freddie (Avison Young - UK) <Freddie.Clarke@avisonyoung.com>  
**Subject:** Homebase Manor Road - carbon offset fund

Hi James,

One of the GLA's comments requires us to confirm either the amount of funding that will be paid into the borough's carbon offset fund or that an agreement has been reached with the borough that the applicant will undertake a carbon reduction project off-site to meet the shortfall.

As set out in our Energy Strategy, we are proposing a contribution to the borough's carbon offset fund. The current estimate is £451,800 based on anticipated carbon emissions.

Are you able to confirm that this approach is acceptable please? Does the borough have a fund that we can pay into?

Kind regards,  
Becky

**Rebecca Doull**  
Principal Planner  
[rebecca.doull@avisonyoung.com](mailto:rebecca.doull@avisonyoung.com)

Avison Young  
65 Gresham Street  
London, EC2V 7NQ  
United Kingdom

**D** +44 (0)20 7911 2087

**M** +44 (0)7985 479 593

[avisonyoung.co.uk](http://avisonyoung.co.uk)





**LOUISE WILLE**

PRINCIPAL SUSTAINABILITY CONSULTANT

+44 20 3668 7290

[louisewille@hoarelea.com](mailto:louisewille@hoarelea.com)

[HOARELEA.COM](http://HOARELEA.COM)

Western Transit Shed  
12-13 Stable Street  
London  
N1C 4AB  
England

